

BUSINESS AND PROFESSIONAL

DIVISION OF EXTENSION UNIVERSITY OF TORONTO 1966-67

BUSINESS AND PROFESSIONAL

DIVISION OF EXTENSION UNIVERSITY OF TORONTO 1966-67

ADMINISTRATIVE OFFICERS

1965-66

THE UNIVERSITY

President C. T. Bissell, M.A., Ph.D., D.Litt., LL.D., F.R.S.C.
Executive Assistant to the President D. F. Forster, B.A., A.M.

Vice-President and Provost M. St. A. Woodside, M.A., LL.D.
Vice-Provost J. H. Sword, M.A.

Vice-President (Research Administration)
C. de B. Robinson, M.B.E., B.A., Ph.D., F.R.S.C.

Vice-President for Scarborough and Erindale Colleges
and Principal of Erindale College D. C. Williams, M.A., Ph.D.

Chief Librarian R. H. Blackburn, M.A., B.L.S., M.S., LL.D.

Vice-President (Administration) F. R. Stone, B.Com., C.A.
Director of Finance G. L. Court, D.F.C., M.Com., C.A.
Secretary of the Board of Governors and
Director of Administrative Services D. S. Claringbold
Director of Physical Plant F. J. Hastie, B.Sc., P.Eng.

Registrar and Director of Student Services R. Ross, M.B.E., M.A.
Director of Admissions E. M. Davidson, B.A.
Director of Financial Aid R. L. Purves, D.S.O., C.D., B.A.
Special Officer (Secondary School Liaison)

J. R. H. Morgan, M.B.E., M.A., B.Paed., LL.D.
Director of Statistics and Records J. M. Tusiewicz, M.A.Sc., M.B.A.
Director of University Health Service . G. E. Wodehouse, M.C., M.D., F.R.C.P.
Assistant Director of University Health Service—Women

Miss F. H. Stewart, B.A., M.D.
Director of Placement and Housing Services . J. K. Bradford, O.B.E., M.A.Sc.
Director of International Student Centre Mrs. K. Riddell, B.A.
Director of the Advisory Bureau

D. J. McCulloch, B.A., M.D., D.Psych., F.R.C.P.

Director of University Extension G. H. Boyes, M.A.

Director of University of Toronto Press M. Jeanneret, B.A.

Director of Information K. S. Edey
Director of Alumni Affairs J. C. Evans, B.A.
Director of Development R. J. Albrant

Warden of Hart House (Acting) E. A. Wilkinson, B.A.
Director of Athletics and Physical Education—Men . . W. A. Stevens, B.S.
Director of Athletics and Physical Education—Women (Acting)

Miss D. Jackson, B.Sc., M.A.
Director of Hart House Theatre R. S. Gill, M.A.

BUSINESS AND PROFESSIONAL SECTION

Co-ordinator M. R. Hecht, M.Sc.
Supervisor L. G. Dutton, C.D., B.A.

PURPOSE

The purpose of the Business and Professional Section of the Division of University Extension is to help men and women in business or other organizations to:

- better understand the nature of organizations and how they are managed
- learn more about areas of management such as finance, marketing, personnel, production, etc.
- improve their professional understanding of new technical and mathematical theories and activities which have come to the fore in recent years
- acquire some knowledge of other skills necessary to their current or future work needs.

Subjects are taught by a group of lecturers drawn from the University and the business community who have broad experience in the practical application of their particular subject. The subjects offered are usually given in a series of 20 lectures, one evening each week. Courses involving discussion and other class participation are limited in size. Some subjects are more advanced than others and admission to these may require a background of experience or previous participation in basic courses. Written tests are offered to students who wish to take them, but this is not obligatory.

TABLE OF CONTENTS

Accounting and Finance

Budgetary Controls	8
Business Finance	8
Business Taxation	8
Financial Statement Analysis	9
Fundamentals for Non-Financial Managers	9

Economics

Economics—An Introduction	10
Money and Banking—The Canadian Capital Market	10

Management

Administrative Practices	11
Business Administration	11
Business Law	11
Business Management	12
Communications in Business—Written	12
Concepts in Management Science	12
Corporate Strategy	13
Effective Speech in Business	13
Evolving Management	14
Human Relations and Human Organization	14
Industrial Management	14
Interviewing and Counselling	15
Introduction to Industrial Sociology	15
Labour Relations	15
Management Principles and Organizational Behaviour	16
Manufacturing Management	16
Motivation in Industry	17
Office Management—Introductory	17
An Overview of Personnel Administration	17
The Personnel Function	18
Personnel—Training	18
Psychology in Industry	19

Marketing

Marketing Management	19
Industrial Marketing	20
Sales Management	20
Advertising and Sales Promotion	20
Marketing Research	20

Professional

About Books for Children	21
Adult Learning and Teaching	21
Advanced Strength of Materials	22
Behaviour of Reinforced Concrete Members	22
Chemistry of Organic Polymers	23
Computer Programming and Analysis for Engineers	23

Decision Making in Quality Engineering	23
Electronics for Biological and Medical Scientists	24
Engineering and Geological Applications of Airphoto Interpretation	24
Heavy Water Reactor Design Principles	25
High Speed Data Processing	25
Illumination II	26
Illumination I	26
Introduction to Solid State Physics	26
Introduction to Stochastic Processes and Their Application in Business and Engineering	27
Linear Algebra and Matrices	27
Linear Programming and its Extensions	27
Metallurgy and Materials Science	28
Organic Chemistry	28
Probability Theory and Mathematical Statistics	29
Simulation and Management Engineering Modeling	29
Statistical Decision Theory and Linear Programming	29
Statistical Methods	30
Systems Engineering	30
Techniques of Operations Research	31
Theory of Vibrations	32

Co-ordinated Programs

Personnel—Industrial Relations	32
Manpower Development	33
Operations Research	33
Marketing	33

Special Programs

Administrative Management Society	34
Canadian Industrial Management Association	34
Society of Industrial and Cost Accountants	34
Canadian Bankers Association	34

GENERAL INFORMATION

Registration

Students enrol by completing the application form on the final page of this booklet. A separate application form is required for each course. Enrolment may be by mail or in person at the Division of University Extension, Room 201, 84 Queen's Park, Toronto 5, from 9 a.m. to 5 p.m. daily, except Saturdays. During the month of September and the first week of October, the Business and Professional Section will remain open on Tuesday and Thursday evenings until 8:30 p.m. to accept registrations. To phone for information call 928-2393.

Fees are payable in advance. Cheques or money orders should be made payable to the University of Toronto.

Admit-to-Lecture Card

When a student enrolls in a course, he receives an admit-to-lecture card. This card must be shown at each lecture before entering the classroom.

Course Enrolment

The last day for enrolment for subjects starting in the fall term is September 30. The date of the opening lecture of each course is indicated in the course description. Winter term lectures begin the week of January 9.

In many classes, enrolment is limited to a specific number of students. If more than the stipulated number register for a particular course, an effort is made to organize an additional class. A second class will not be offered, however, until a reasonable number of students have been accepted.

All courses are subject to change as to time and place before the beginning of the term. Students will be notified of any change.

For additional information, phone 928-2393

Refunds

Refunds will be considered *only* if they are requested in writing before the *second* lecture of the course is given. Because of the cost of making adjustments, a charge of \$5.00 is made for each refund.

REQUESTS FOR REFUNDS MUST BE IN WRITING AND BE ACCOMPANIED BY ADMIT-TO-LECTURE CARDS AND THE OFFICIAL RECEIPT.

Admission Requirements

Unless otherwise indicated there are no academic requirements for admission to these courses. In the case of some subjects, applicants are asked to send, with their application, a brief resume of experience so that we may assist the student to enter the appropriate class.

Recognition

Optional tests are offered in many courses. Those students who are successful in these tests will be advised of the results of the tests. Since instructors are not required to check attendance, letters cannot be issued certifying the attendance of an individual student in a particular course.

Unless otherwise specified, the courses offered in this brochure do not lead to a diploma or degree.

Parking

Students are urged to use public transportation, as parking is limited on or near the campus. A fee of 50c is charged for parking facilities on the main campus. A fee of 25c is charged at the parking lots in the area of Huron and Willcocks, Bancroft and Classic Streets.

Evening phone number during session 928-2394 (until 8.30 p.m.)

ACCOUNTING AND FINANCE

Budgetary Controls

W. G. PEAKER

Ten lectures on Monday evenings at 6:00 in Room 116, Galbraith Building, beginning October 3.

Fee: \$25.00

The course will include the study of the nature and purpose of budgets; benefits to be gained and disadvantages to be avoided; types of budgets to include sales or revenue, purchases or production costs, selling expenses, general and administrative expenses, other expenses, cash budgets, capital expenditures, preparation of budgets including delegation of responsibility and organization; analysis of the budget and comparisons; and case studies.

Business Finance

ROBERT ANDERSON

Twenty lectures on Wednesday evenings at 7:30 in Room 304, Galbraith Building, beginning October 12.

Fee: \$40.00

Although the main emphasis is on the financial problems of the corporation as seen by the financial manager, some time will be spent on the particular problems of small business.

Sources of funds will be considered in relation to the uses of these funds and in relation to the implications of risk, income and control, for the creditor and the debtor.

Assessment of the expected returns on capital projects, the flow of funds, mergers and consolidations are among the other subjects to be explored.

This course will be conducted through case studies as the basis for class discussion. Students will be expected to spend 3 to 5 hours per week in preparation.

An introductory knowledge of accounting and financial analysis would be helpful but not essential.

Business Taxation

J. R. HUTCHINSON

Twenty-five lectures on Wednesday evenings at 7:30 in Room 248, Galbraith Building, beginning September 28.

Fee: \$60.00

This course is designed to give the executive an understanding of those aspects of taxation which will frequently confront him when making business decisions. Typical items covered are: amalgamations, depreciation policy, dividend policy, etc.

As well as executives, this course should be of particular interest to trust company trainees and life underwriters. It should also be useful to chartered accountants and lawyers who received their training outside Canada and who wish to become familiar with Canadian tax law.

The general plan will be to outline the relevant tax regulations covering a given topic, to give illustrative examples and to discuss the implications of the regulations. In addition to acquiring an appreciation of existing tax law, it is intended that the executive will become familiar with the sources of information covering present and future regulations.

The major topics are listed below:

1. Corporation Income Tax

2. Depreciation
 3. Arms Length Transaction
 4. Purchase and Sale, Amalgamation of Businesses
 5. Stock Options, Pension Plans, Profit Sharing Plans
 6. Capital Gains
 7. Gift Tax
 8. Succession Duties and the Estate Tax Act
 9. Trends in Taxation
 10. The Impact of the Royal Commission on Taxation
- The Class will be limited to 50 students.

Financial Statement Analysis

J. M. SWINDEN

Twenty lectures on Monday evenings at 6:00 in Room 347, Galbraith Building, beginning October 17. *Fee: \$55.00*

The purpose of this course is to give those businessmen who have some knowledge of accounting, a greater understanding of the problems involved in the preparation, analysis and interpretation of financial statements.

The following topics will be discussed:

Generally accepted accounting principles of asset valuation and income measurement

Underlying assumptions, composition and limitations of financial statements

Form, content and legal requirements of the balance sheet, and statements of profit and loss, earned surplus and sources and applications of funds

Financial statement presentation and disclosure of inventories, fixed assets, depreciation and income taxes

Analytical techniques used to investigate financial statements, including break-even point and ratio analysis

Business combinations and techniques of re-organization

Problems peculiar to consolidated financial statements

Price level accounting

Reference is made throughout the course to a few published reports of large Canadian public companies.

Fundamentals for Non-Financial Managers

Fee: \$50.00

Downtown Campus

W. A. R. MACFADDEN

Twenty lectures on Tuesday evenings at 8:15 in Room 420, Galbraith Building, beginning October 11.

Scarborough Campus

J. HOWARD

Twenty lectures on Tuesday evenings at 7:00 at Scarborough College, beginning October 11.

This course is designed specifically to convey fundamental concepts, principles and practices of finance and accounting to operating managers. The course begins with sessions on the basic principles of bookkeeping and

accounting and goes on to review financial statement analysis, cost accounting and methods of finance. The lecture-discussion method concentrates on the influence which these financial and accounting concepts have on the interpretation of results, planning, and their influence on decision making.

Each class will be limited to 50 students.

TEXT: Meigs, Johnson, Blazouske—*Accounting, The Basis for Business Decisions*, McGraw-Hill Company of Canada Limited (Canadian Edition).

Please indicate on application form whether Downtown or Scarborough campus.

ECONOMICS

Economics—An Introduction

J. I. MCDONALD

Twenty-five lectures on Thursday evenings at 6:00 or 8:15 in 243, Galbraith Building, beginning September 29. *Fee*: \$65.00

The elements of economic theory will be developed and illustrated with reference to contemporary economic problems.

Lectures will include discussion of the following topics:

Price Theory and Applications

Money and Banking

National Income

Business Cycles and Economic Growth

International Trade

Each class will be limited to 40 students.

Please indicate on application form the class desired (6:00 or 8:15 p.m.)

Money and Banking

The Canadian Capital Market P. A. T. CAMPBELL

Twenty lectures on Monday evenings at 7:30 in Room 348, Galbraith Building, beginning October 17. *Fee*: \$55.00

The purpose of this course is to examine the structure of the various markets that combine to form the Canadian capital market. These markets would include the bond, mortgage, stock, foreign exchange and negotiated loan markets. Special attention is paid to the Canadian banking system which dominates the capital market. Interest arbitrating relationships between Canada and the United States are examined in detail. The uses to which Canada's monetary authorities, the Bank of Canada and the Department of Finance, put the Canadian capital market to further specific and macro-economic policy goals are continuing themes.

The class will be limited to 50 students.

TEXT: Report of the Royal Commission on Banking and Finance.

MANAGEMENT

Administrative Practices

RUSSELL J. PORTER

Twenty lectures on Wednesday evenings at 6:00 in Room 243, Galbraith Building, beginning October 12. *Fee:* \$50.00

The function of the administrator and the general nature of administration are the major subjects to be studied. The first lectures will be devoted to the study of planning, organizing, directing and controlling. Later sessions will deal with administrative techniques employed in management. The emphasis will be on class discussion. Cases, films and an extensive reading list will help to provide background for discussion.

Practical experience in administration at a relatively high decision-making level is a prerequisite for admission. Students are required to submit a brief resume of experience with application forms.

The class will be limited to 35 students.

TEXT: Newman and Sumner—*The Process of Management*, Prentice-Hall Inc., 1962.

Business Administration

W. A. DIMMA

Twenty lectures on Tuesday evenings at 6:00 in Room 2135, Sidney Smith Hall, beginning October 11. *Fee:* \$45.00

This course, divided into the four general areas of production, marketing, accounting and finance, and general management, will deal with a wide range of business activities. In 20, two-hour sessions, the lecturer will survey many phases of business rather than select fewer topics and treat them more exhaustively. For this reason, and because it is aimed primarily at those at or near the middle-management level, admission to this program presupposes some general knowledge of business, including at least two years practical experience. It is recommended that applicants have completed successfully Grade XIII or its equivalent, although exceptions will be made for those with more than five years' business experience.

Business Law

W. L. S. TRIVETT

Twenty lectures on Thursday evenings at 7:30 in Room 305, Galbraith Building, beginning October 13. *Fee:* \$50.00

The lectures in this course will be aimed at counselling an average businessman with particular emphasis on the person who now operates or intends to operate his own business. It has been found useful by personnel of credit and contract departments, bankers, sales representatives, executives and legal secretaries and comparable persons.

Included in the topics which will be dealt with are:

The making of contracts

Avoiding combinations in restraint of trade

Buying, selling, and mortgaging real estate

Municipal laws, zoning and assessment

Corporation and business income tax

Sole enterprise, partnership, and corporation law including manner of

incorporation, organization, share structure and duties of directors
Financing the business enterprise, including securities offerings
Credit buying and collection of debts.

The course is designed to be practical and informative, but not a substitute for legal advice. Students will be given sources of information and projects will be assigned to them.

The class will be limited to 50 students.

TEXTS: *Anger's Digest of Canadian Law*, Canada Law Book Company Ltd.
The Summary of Canadian Commercial Law (Anger), Sir I. Pitman Publisher.

Business Management

J. BULLOCH

Twenty lectures on Tuesday evenings at 7:30 p.m. at Scarborough College beginning October 11. *Fee: \$45.00*

This is a broad introductory course in business management, covering five general areas: marketing, production, personnel, finance, and management.

Topics to be covered include:

The consumer, product policy, channels of distribution, advertising and selling.

Inventory control, production control.

Recruitment and training, wage and salary administration, the Labour Relations Act, contract negotiations.

Financial analysis and planning, asset management, sources of funds.

Organization theory, functions of management, small business management.

Applicants should have successfully completed Grade 13 or have several years of practical business experience.

Communications in Business—Written

R. N. BEATTIE

Twenty lectures on Thursday evenings at 7:30 in Room 116, Galbraith Building, beginning October 13. *Fee: \$40.00*

This course is designed for supervisors who are required to write letters, memoranda, reports, instructions, and other business communications. The planning and writing of these is the principal subject of discussion and practice, although the course does include some review of English grammar, usage and composition. It is desirable for students to have grade XIII English Composition, or its equivalent.

TEXTS: Reid and Wendlinger—*Effective Letters, A Program for Self-Instruction*, McGraw-Hill Company of Canada Limited, 1964. Bernstein, T. M.—*The Careful Writer, a Modern Guide to English Usage*, Atheneum, 1965. Additional reading material and references will be supplied in class.

Concepts in Management Science

J. W. ABRAMS

Twenty lectures on Tuesday evenings at 7:30 in Room 404, Mechanical Building, beginning October 11. *Fee: \$50.00*

This course integrates many important aspects of management science,

emphasizing the contributions of the physical and behavioural sciences, engineering, economics and mathematics.

From the historical development of classical management principles, the course traces the applications of social psychology, decision theory, feedback control, and organization theory to the contemporary problems of decision-making and leadership.

Continuing with an evaluation of relevant economic concepts as bases for both qualitative and quantitative analyses, there are detailed discussions of competitive structure, demand analysis, production activity analysis, and the interaction of pricing, promotion and product-line strategies.

The power, scope and limitations of mathematical models in management science are portrayed through discussions of various applications in production, marketing, advertising, and other fields.

The course is designed to give a broad survey of a new and rapidly developing field.

TEXT: Donald J. Clough—*Concepts in Management Science*, Prentice-Hall Inc.

Corporate Strategy

S. MAXWELL

Ten lectures on Tuesday evenings at 6:30 in Room 216, Galbraith Building, beginning October 11.

Fee: \$25.00

This is a lecture-discussion series on the problems of corporate strategy and is intended for persons with a number of years of experience in management. Topics covered in the series will include: a review and ordering of the major issues in contemporary management practice, the job of top management, planning and control, effective organization, understanding change and growth, human relations and industrial relations from a management viewpoint, leadership for the future, current issues in personnel policy, management decision making, the computer and management.

A select reading list will be given at the beginning of the series. Additional material will be indicated during the course. Several case studies will be used to develop understanding of some of the issues under discussion.

Effective Speech in Business

MRS. H. TUCKER

Twenty lectures on Tuesday or Wednesday evenings at 7:30 in Room 107, Galbraith Building, beginning October 11 and 12.

Fee: \$50.00

The first term will be devoted to improving skills in oral communications with emphasis on the voice and personal composure in group situations. The second term will deal with the delivery of reports and public speeches. It will give training in chairmanship, conduct of meetings, impromptu speech and parliamentary procedure.

This is not a course for the correction of speech defects. Each class is limited to 30 students. A letter should accompany the application and should state the candidate's background and reasons for wishing to take this course. Tuesdays—For the young executive and those without previous training.

Wednesdays—For the senior executive requiring speech experience.

TEXT: Sanford & Yeager—*Effective Business Speech*, McGraw-Hill.

Evolving Management

B. M. M. CARPENDALE

Twenty lectures on Monday evenings at 7:30 in Room 404, Carr Hall, St. Michael's College, beginning October 17. *Fee: \$60.00*

Aim of the course will be to look critically and constructively at such organizational factors as visible and invisible structure, motivation, and person-to-person contacts, and to see how these factors interact to affect the organization's vitality, effectiveness, and ability to progress.

The course will consist of lectures, seminars, study groups and exercises in communication. It is hoped that these activities will create learning situations in which participants can not only stretch their intellects, but also learn to increase their ability to be objective in their thinking, to become aware of some of their own areas of prejudice, more aware of their own impact upon others, and to give practical experience in methods of tackling the problem of making good use of committees.

The course is intended for people carrying, or about to carry, general management responsibilities in business or other organizations. There are no entrance requirements, but participants should have a good management background. A university degree would be helpful, but is not essential. There will be no examinations, but there will be background reading and some assignments.

Human Relations and Human Organization

MURRAY WILSON

Twenty lectures on Wednesday evenings at 7:30 in Division of Extension Board Room, 84 Queen's Park, beginning October 12.

Fee: \$50.00

The purpose of this course is to further our understanding of the interdependence of human relationships and human organizations and to develop a greater awareness of the causes of human behaviour, both of individuals and of groups. Often such an understanding develops best in learning situations in which people participate in analyzing common experiences, especially if they can experiment with new ways of looking at problems and working with others. Consequently while some lecture and demonstration materials will be presented, the major attempt will be to provide those attending with an opportunity to develop creativity in human situations in an informal atmosphere which promotes free discussion and increased sensitivity to others.

This course will be of particular interest to persons preparing themselves for broader responsibilities. The class will be limited to 40 students.

Industrial Management

W. T. NUTSON

Twenty-five lectures on Thursday evenings at 7:30 in Room 348, Galbraith Building, beginning September 29. *Fee: \$65.00*

This study of the principles and techniques of industrial management divides broadly into two general areas:

An introduction to modern management thought with the subsequent emphasis on people—both manager and those managed—relative to

organization research and theory, motivation, incentives and morale, policy formulation, planning and decision making;

A broad introduction to the physical make-up of an industrial organization—in this second category, there will be a discussion of line and staff functions, and their interrelationship.

The significance of good control as a function of industrial engineering, production planning and accounting will be amplified.

The class will be limited to 50 students.

TEXT: Haynes and Massie—*Management—Analysis, Concepts and Cases*, Prentice-Hall Inc.

Interviewing and Counselling

J. C. CHISHOLM

Twenty lectures on Monday evenings at 8:00 in Room B, Law Building, beginning October 17. *Fee: \$50.00*

This course is offered to those who are interested in learning to improve their interviewing skills. While it may be of interest to staff persons, it will be of particular interest to managers and supervisors.

In this course various types of interviews will be covered, i.e., employment interviews, counselling interviews, promotion interviews, corrective interviews, employee opinion interviews, appraisal interviews and exit interviews.

In the interview training the emphasis will be on observation practice, critical review and discussion of practical experience.

Students are required to submit a brief résumé of their experience with application forms.

The class will be limited to 30 students.

TEXT: Kahn and Cannell—*The Dynamics of Interviewing*, J. Wiley & Sons.

Introduction to Industrial Sociology

J. WAYNE

Twenty lectures on Tuesday evening at 7:30 in Room 304, Galbraith Building, beginning October 11. *Fee: \$50.00*

The course aims at giving the student an awareness of how broader social issues affect business and analyses specific social forces at work in business and industry. Concepts and methods of sociological analysis are developed and applied to specific problems as they may occur in the experience of the student. Among the topics to be discussed will be: organization structures, the impact of changing technology, labour unions and labour-management relations, the organization man, bureaucracy, the business organization and society, authority and supervision, communication, employee turnover, the role of women, critics of capitalism, and individual careers.

TEXT: Theodore Caplow—*The Sociology of Work* (paperback).

Labour Relations

J. G. BETTS

Twenty-five lectures on Tuesday evenings at 7:30 in Room 314, Galbraith Building, beginning September 27. *Fee: \$65.00*

This course is primarily for people in industry who now carry responsibility for decisions in personnel administration, particularly where collective bargaining is a factor.

The topics covered will include the history of the trade union movement and labour legislation, with a more detailed examination of certification procedure and The Labour Relations Act of Ontario. Negotiations, conciliation, administration and arbitrations will be covered, together with a study of some of the more important portions of the collective bargaining agreement.

The sessions are of a work-session nature, wherever practical, in order to develop an understanding of the problems both union and management bring to the Labour Relations situation, together with the environment in which they operate.

TEXT: Schlichter, Healy and Livernash—*The Impact of Collective Bargaining on Management*, Brookings Institution.

Management Principles and Organizational Behaviour A. I. HAINEY

K. W. PRESTON

Twenty lectures on Wednesday evenings at 6:00 in Room 347, Galbraith Building, beginning October 12. *Fee: \$50.00*

The course will be divided into three general areas. The first will deal with the theory and principles of the managing process. The various management functions will be reviewed and discussed in a critical manner.

The second area will involve an examination of how recent studies in the field of behavioural science and decision-making can apply to management situations. Macgregor's "x" and "y" theory and Blake's Managerial Grid will be presented and discussed.

Finally, a series of case studies will provide an opportunity for a review of the management principles and organizational behaviour as they apply to entrepreneurial situations.

(For those pursuing the Personnel-Industrial Relations co-ordinated program, this course must be taken in the final year.)

Manufacturing Management

R. R. SERVICE

N. RUSZ

Twenty lectures on Monday evenings at 7:30 in Room 108, Division of Extension, 84 Queen's Park, beginning September 26. *Fee: \$50.00*

This course deals primarily with the functions of manufacturing management, stressing the activities of planning, organization, and control. Emphasis will be placed on the principles and methods of analysis applicable to the solution of problems of the manufacturing function within the industrial enterprise. While the course develops the principles and concepts of manufacturing management, it does not provide a detailed study of the techniques used in the application of these principles.

Topics to be discussed include:

Production planning and control

Network planning

Method study and work measurement

Job evaluation and wage determination

Manufacturing economics

Capital investment

Cost reduction and cost control

This course is designed for people in supervisory or management positions seeking to improve their effectiveness.

TEXT: F. Moore—*Manufacturing Management* (4th edition), Richard Irwin.

Motivation in Industry

DR. S. D. SALEH

Ten lectures on Monday evenings at 7:30 in Room 305, Galbraith Building, beginning October 3. *Fee: \$25.00*

Managers and supervisors are becoming more aware of the importance of employee motivation as a variable which contributes to organizational effectiveness. This course, which is intended for middle management, is developed to give an overview of this area.

The course discusses the relationship between motivation and productivity, and deals with the different factors that are related to morale and employee satisfaction.

Factors discussed include: employee personality; style of leadership and supervision; the organization structure; the policies of the organization; job design; and group impact, etc.

This course will be limited to 50 persons.

TEXT: S. W. Gellerman—*Motivation and Productivity*, American Management Association, New York, 1963.

Office Management—Introductory

J. DUFFIN

Ten lectures on Tuesday evenings at 7:30 in Room 348, Galbraith Building, beginning October 11. *Fee: \$25.00*

This introductory course will appeal to men and women who are attracted to office management as a career. Also general supervisors and newly appointed office managers who have limited formal training may find useful the background information available in the course.

The content covered during the ten evenings will be of a basic nature. There will be ample time for the discussion of problems.

Among the topics to be discussed are the following:

The Office Manager's Function and Responsibilities

Office Organization

Personnel Selection and Training

Communications and Records

Standardization in the Office

Scope of the Office.

The class will be limited to 50 students.

An Overview of Personnel Administration

R. K. ARIMA

Twenty-three lectures on Wednesday evenings at 7:30 in Room 119, Galbraith Building, beginning October 12. *Fee: \$65.00*

This course should prove useful to individuals who have just entered or are interested in entering the personnel field. Also, for individuals in supervisory

positions, the course will provide an appreciation of the personnel department's role in a business organization.

As an introduction to the field of Personnel Administration, the course covers the major personnel activities by means of lectures, class discussions and analysis of case studies. Pertinent findings from the social sciences and human relations studies will be covered.

Topics to be covered include:

- The relationship of the personnel function to the rest of the organization;
- The personnel administrator's job in manning the operation—recruitment, selection and placement;
- Evaluating jobs and personnel—wage and salary administration, performance appraisal;
- Training and developing people;
- Communications—interviewing and counselling;
- Motivating people;
- Current labour relations problems and trends;
- Implications of technological change—manpower planning.

The class will be limited to 50 students.

The Personnel Function

R. NICHOLSON

Twenty-five lectures on Wednesday evenings at 7:00 in Room 116, Galbraith Building, beginning September 28. *Fee:* \$65.00

This is a survey course on the work of the personnel department. It is designed to illustrate the needs of personnel administration by examining its principles, policies and procedures in the light of past and recent developments.

Topics will include:

- The organization and staffing of the personnel department, the personnel administrator's job, staff-line relationships.
- Employment, job requirements, selection and testing, on-the-job training.
- Development, technical training, performance evaluation, motivation.
- Wage and salary administration, minimum wage legislation, job evaluation, incentives and productivity.
- Security, Unemployment Insurance legislation, retirement plans, benefits and services, provincial and federal welfare legislation.

Personnel—Training

J. L. SUKLOFF

Twenty lectures on Wednesday evenings at 7:30 in Room 319, Galbraith Building, beginning October 12. *Fee:* \$40.00

This course is specifically designed for those who wish to know and make use of the latest knowledge and techniques in training employees and in developing supervisors and managers to meet today's business and industrial needs.

Emphasis is placed on the value of training programmes and their practical use in solving the day-to-day and long-range operating problems of an organization.

The course provides an opportunity for people carrying personnel respon-

sibilities, or in line management position, to study programmes in effect in other companies and to learn more about:

1. Organization Planning
2. Determining Training Needs
3. How People Learn
4. Teaching Techniques
5. The Art of Questioning
6. On the Job Training
7. Supervisory Training
8. Management Development.

Psychology in Industry

DR. S. D. SALEH

Twenty-five lectures on Wednesday evenings at 7:30 in Room 348, Galbraith Building, beginning September 28. *Fee: \$65.00*

Psychologists have developed a body of knowledge in the area of human behaviour that can be applied usefully to business and industry.

This course is intended primarily for employees in the personnel field. Interested middle management also may enrol. The course deals with the application of the principles of psychology to business and industrial situations. Areas dealt with include the application of psychology to employee motivation and attitudes; selection and the effective use of psychological tests; performance appraisal; learning and training and development; perception, communication, and organizational structure; leadership and style of supervision.

Discussion of these areas of application will include consideration of such topics as labour turnover; work groups; and the informal organization.

TEXT: N. R. F. Maier—*Psychology in Industry*, 3rd edition, Houghton, Mifflin, Boston, 1965.

MARKETING

Marketing Management

Fee: \$40.00

Downtown Campus

G. H. LENNARD

Twenty lectures on Monday evenings at 7:30 in Room 244, Galbraith Building, beginning October 17.

Scarborough Campus

J. F. LOWERY

Twenty lectures on Tuesday evenings at 7:30 at Scarborough College, beginning October 18.

Marketing Management is a survey course which considers the important marketing functions such as distribution, pricing, advertising, marketing research, packaging, sales management, brand policy, product development, merchandising and financing the marketing plan.

Discussion of actual cases on Canadian marketing situations and periodic guest speakers supplement the lecture series. The course will provide the student with an appreciation of modern marketing principles and practices.

TEXT: Leighton and Thain—*Canadian Problems in Marketing*, McGraw-Hill Company of Canada Limited (Second Edition).

Please indicate on application form whether Downtown or Scarborough campus.

Industrial Marketing

D. GALLAGHER

Ten lectures on Monday evenings at 7:30 in Room 319, Galbraith Building, beginning October 3.

Fee: \$25.00

This course is given for those who are interested in the application of modern marketing techniques to the marketing of industrial products and services. Included are the following topics of study: characteristics of industrial markets, pricing, middlemen and methods of distribution, selling and promotion, product development, marketing organization, market planning and control.

Prerequisite: Course "Marketing Management," or equivalent experience.

Sales Management

D. GALLAGHER

Ten lectures on Monday evenings at 7:30 in Room 319, Galbraith Building, beginning January 9.

Fee: \$25.00

Included in this course are the following topics of study: personal selling as a part of the marketing mix, nature of the selling job, recruiting and selecting salesmen, training and development, sales control, compensation, territory allocation and evaluation, sales organization and co-ordination with related functions.

Prerequisite: Course "Marketing Management," or equivalent experience.

Advertising and Sales Promotion

G. V. FORSTER

Ten lectures on Thursday evenings at 7:30 in Room 248, Galbraith Building, beginning October 13.

Fee: \$25.00

This course includes study of the objectives and methods of promotion, and its place in total marketing strategy. Such aspects of advertising and promotion as audience identification, message and media selection, budgeting and control, and measurement of results are studied in detail. In addition, discussion will include the planning of promotion programs, types of establishments offering promotion services, and management of the promotion function.

Prerequisite: Course "Marketing Management," or equivalent experience.

Marketing Research

J. M. PHILP

Ten lectures on Thursday evenings at 7:30 in Room 248, Galbraith Building, beginning January 12.

Fee: \$25.00

This course includes study of the application of formal research to the various functional marketing areas. The more significant research techniques and services are examined, with emphasis on their proper use and

limitations. Research project organization is emphasized. The use of statistical methods will be covered in non-technical terms.

Prerequisite: Course "Marketing Management," or equivalent experience.

PROFESSIONAL

About Books for Children

MARGUERITE BAGSHAW

Twelve lectures on Tuesday evenings at 8:00 at Boys and Girls House Theatre, 40 St. George St., beginning September 27.

Fee: \$35.00

This course is designed by the staff of the Children's Services of the Toronto Public Libraries for the teacher, teacher librarian, and anyone concerned and interested in children's reading. This course will survey various categories of children's literature always with reference to specific books, the criteria for choosing them, and their place in the child's life. There will be displays both of the books discussed and of others suitable for children from infancy through Grade VIII. Some of the treasures from the Osborne Collection of Early Children's Books will be shown. Two assignments will be given during the course.

Topics to be covered include:

Books of information in general

Folk literature

Epic and myth

People and events in history

Historical fiction

Fantasy in fiction

Realistic fiction

The classics in new editions

Picture books

Poetry and verse.

Adult Learning and Teaching

ALLEN TOUGH

Twenty-five lectures on Tuesday evenings at 6:30 in Room 204, Galbraith Building, beginning September 27.

Fee: \$65.00

This course will examine the psychology of adulthood, how adults learn, how to teach adults, and how to plan educational and training opportunities for them. The course is designed for men and women who are involved in the education or training of adults in business, industry, professional and vocational training programs, educational institutions, religious institutions, government, libraries, armed services, and other organizations.

The members of this course will learn about the following topics: the psychological characteristics of adults; abilities during adulthood; motivation, interests, and career patterns; what adults learn; how they learn; the process of self-teaching; sources of assistance for adult learners; the planning process; teaching methods; some specific techniques; groups in learning; and training for an occupation. Members will frequently be encouraged to

relate this knowledge to their own learning and their own professional responsibilities.

The instructor will attempt to use methods suitable for an adult group. These methods will include reading, brief lectures, seminar discussion, small-group discussion, mimeographed handouts, exercises, application, and observation.

Those who wish to receive a letter of recognition in the course will be asked to submit a variety of brief written assignments, usually requiring thoughtful reaction to the reading and discussion. There will be no tests and no examination.

The only requirement for admission to this course is an enthusiasm for increasing one's own competence in helping adults learn.

The class will be limited to 30 students.

TEXT: Kidd—*How Adults Learn*, Association Press (New York) or G. R. Welch (Etobicoke).

Advanced Strength of Materials

B. H. KARNOPP

Twenty-five lectures on Tuesday evenings at 7:30 in Room 254, Mechanical Building, beginning September 27. Fee: \$60.00

The course is designed to cover those topics not ordinarily considered in a first course in the strength of materials and to serve as an introduction to the theories of elasticity and plasticity.

Topics to be considered are the torsion of non-circular cylinders, the theory of thick discs, elementary plate theory, beams on elastic foundations, and energy methods. The field equations of elasticity will be formulated and the special case of the two dimensional theory examined. In particular, the Airy stress function will be introduced and the Boussinesq solution examined. The notions from the strength of materials will then be extended into the theory of the perfectly plastic solid. Stress deviation and strain deviation will be introduced. Stress-strain laws will be written for the plastic state, and the nature and expression of yield conditions will be discussed. Elastic-plastic analyses will then be made for beams, torsion of cylinders, and thick disks.

Educational prerequisites for this course are first courses in the strength of materials and differential equations. Applicants should have an engineering degree, or equivalent experience.

TEXT: Den Hartog—*Advanced Strength of Materials*.

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

Behaviour of Reinforced Concrete Members

I. C. MEDLAND,

J. TIMUSK, M. W. HUGGINS

Twenty-five lectures on Wednesday evenings at 7:30 in Room 220, Galbraith Building, beginning September 28. Fee: \$60.00

This course offers a fundamental study of the ultimate strength and behaviour of the reinforced concrete members subjected to axial and transverse loads. The early part of the course will be devoted to the development of the fundamental relationships and the study of the behaviour of the members starting from the stress-strain diagrams of the concrete and steel, and compatibility of strain.

Relations between results of research and current design specifications (NBC—1965) will be examined.

Creep and shrinkage and their effect on reinforced concrete members will be discussed. An introduction to the behaviour of reinforced concrete structures will be made. A number of numerical examples will be worked out in the class to illustrate the application of the fundamental concepts and to introduce some of the new design aids.

TEXTS: Ferguson—*Reinforced Concrete Fundamentals*, J. Wiley & Sons. Winter, Urquhart, O'Rourke, Nilson—*Design of Reinforced Concrete Structures*, McGraw-Hill Company of Canada Limited (7th Edition).

(Offered in co-operation with the Portland Cement Association.)

The Chemistry of Organic Polymers

J. E. GUILLET

Ten lectures on Monday evenings at 7:00 in Room 161, Lash Miller Building, beginning October 17

Fee: \$25.00

This course describes the chemistry of organic polymers with particular reference to their use in modern technology as plastics, coatings, and synthetic fibres. It is designed for the graduate chemist or the engineer who has some background in chemistry.

A knowledge of advanced mathematics is not required.

Computer Programming and Analysis for Engineers

A. C. HEWITT

Twenty-five lectures on Tuesday evenings at 7:30 in Room 119, Galbraith Building, beginning September 27.

Fee: \$65.00

This course covers scientific programming language and technique including programme analysis, logic diagramming, coding, debugging and documentation.

Examples of various applications are explored. Each student will be assigned a problem in his own area of interest to be carried through final computer programming.

Other topics touched on will include: History of computers, their internal organization and design, Symbolic logic, Data processing and latest developments in computer language and application.

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

Decision Making in Quality Engineering

W. A. SAWYER

C. S. ARGYLE

Twenty-five lectures on Tuesday evenings at 7:00 in Room 116, Galbraith Building, beginning September 27.

Fee: \$50.00

The course is designed for those who wish to acquire a working knowledge of the techniques used in making decisions about the quality of processes and products, what affects quality and how it can be economically controlled. The course emphasis is on the application of logical, mathematical and statistical approaches to the solution of practical problems. Although the examples are quality oriented, the techniques are equally applicable to other manufacturing, processing and business problems.

Course participants are expected to take part in class discussions and class group problems. Homework will be assigned. Each participant is to undertake a project applying one or more of the techniques to the solution of a business problem in his own area of responsibility. An optional examination will be given and the final mark will be based upon the results of the homework, project and examination.

Prerequisites: High school mathematics or equivalent and knowledge of basic probability and statistics or statistical quality control.

The class will be limited to 25 students.

(Offered in co-operation with the American Society for Quality Control.)

Electronics for Biological and Medical Scientists

L. W. ORGAN

Twenty-five lectures on Tuesday evenings at 7:30 in the 4th floor Coffee Room of the Best Institute, beginning September 27.

Fee: \$60.00

This course is designed to give, by lecture and demonstration, an understanding of the electronic apparatus used in medical practice and biological research.

Sufficient basic electronics will be taught to allow consideration of such biomedical apparatus as differential amplifiers (the basis of all electrocardiographs and electroencephalographs), cathode followers and electrometers, stimulators and isolation units, and biological transducers. Consideration will also be given to electrode systems, the recognition of recording artifacts, and the concept of feedback.

TEXT: (Recommended Reading) Yanoff, Davis—*Bio-Mechanical Electronics*.

Engineering and Geological Applications of Airphoto Interpretation

S. J. G. BIRD

Twenty-five lectures on Tuesday evenings at 7:00 in Room 303, Galbraith Building, beginning September 27.

Fee: \$60.00

This course in airphoto interpretation is designed for those who have had a basic course in airphoto interpretation. This would not necessarily be a prerequisite but would mean that a person not familiar with this work would have to read a basic text during the first few weeks of the course on their own time.

This course will consist of small group instruction and considerable work on projects with a great variety of aerial photographs, using the accompanying soil, geological and topographic maps. The student will be allowed to pursue projects which most closely follow his own interests or disciplines. Guest lecturers who are expert on particular topics will be invited to contribute their knowledge and experience.

The types of projects and lectures to be offered consists of the following:

1. Soil mapping and prediction of engineering problems in both areas of bedrock and glacial fill.
2. Location of mine access roads.
3. Location of highways through Northern Ontario.
4. Interchange study of expressway systems in Southern Ontario.
5. Acquisition of traffic data and vehicle tracking using airphotos.

6. Geological mapping and land form identification.
 7. Detailed studies of airphotos and prediction of bedrock type and overburden thickness.
 8. Location of granular deposits and commercial gravel pits.
 9. Drainage area study and determination of culvert locations and sizes.
 10. A study of the areas of erosion and deposition along the shore of Lake Huron, including land use classifications and shoreline structures.
 11. A thorough study of the available imagery from remote sensors, such as infra-red, radar, and colour photography, and their applications.
 12. Land use classification and projected land use using photographs of the same area in different years.
 13. Study of permafrost regions, their particular land forms, and the engineering problems encountered.
- The course is limited to 30 students.

Heavy Water Reactor Design Principles

Course Director: D. G. ANDREWS

Twenty lectures on Wednesday evenings at 7:00 in Room 123, Lash Miller Building, beginning October 12. *Fee:* \$60.00

This course is intended primarily to give an overall picture of the heavy water reactor system, and is aimed at engineers and designers working on, or otherwise interested in, some aspect of the nuclear reactor field. Lecturers will be chosen from among leading workers in this field.

Topics covered will include: reactor fundamentals; costs, thermodynamics; physical, chemical, and metallurgical problems; steam generators and turbines; design of the core; shielding; fuel systems; the control system; instrumentation; hazards; and other pertinent topics.

(Offered in co-operation with the Canadian Nuclear Association.)

High Speed Data Processing

Course Director: J. N. P. HUME

L. E. S. GREEN

Twenty lectures on Thursday evenings at 7:30 in Room 120, Galbraith Building, beginning October 13. *Fee:* \$55.00

This introduction to modern high-speed data processing systems provides a general background on the uses of stored programme computers in business problems. It is divided into three approximately equal sections:

- Data processing systems
- Coding and programming
- Applications.

The section on systems is a study of the components and principles of computers. The section on coding and programming introduces terminology and new ideas through a few simple problems. The last section is about the application of these new methods to insurance, inventory control, accounting, production scheduling, etc. Throughout the course a special effort is made to concentrate on methods which are generally valid on modern machines. The course terminates with a symposium, in which representatives of manufacturing and other organizations active in this field in Canada are invited to participate.

Applicants need not have specialized knowledge of mathematics nor any knowledge of electronics. They should, however, have some interest and experience in a field where the handling of numerical data is important, such as accounting, banking, business management, investment financing or insurance.

This class is limited to 100 students.

Illumination II

M. G. CURRIE

Twelve lectures on Thursday evenings at 7:00 in Room 216, Galbraith Building, beginning September 29. *Fee: \$40.00*

This course is complementary to Illumination I and the applicants should have satisfactorily completed that course or be able to demonstrate competence in its subject matter.

This course will relate the fundamental principles discussed in Illumination I to the design of the visual environment—both interior and exterior. Consideration of the interrelation of lighting with other environmental factors (heating, air conditioning, acoustics, etc.) will be included.

The course will consist of lectures, problem sessions, etc. Discussion will be encouraged.

(Offered in co-operation with the Illuminating Engineering Society Toronto Section.)

Illumination I

M. G. CURRIE, G. E. DAVIDSON

Twelve lectures on Thursday evenings at 7:00 beginning January 12. Location to be announced. *Fee: \$40.00*

This course is designed to provide a sound, fundamental background in illumination for those in public lighting services, consulting engineering, lighting manufacturing and sales, architecture, etc. Applicants should be engineering or architectural graduates, technological institute graduates (e.g. Ryerson) or have equivalent educational background and experience. A brief resume of the applicant's qualifications will be required with the application forms.

The topics covered will include: the eye and vision; radiation and light production; photometric theory; light sources; light control and lighting materials; photometry or daylight.

The course will consist of lectures, and laboratory and problem sessions. Discussion and active student participation will be encouraged.

(Offered in co-operation with the Illuminating Engineering Society Toronto Section.)

An Introduction to Solid State Physics

R. J. BALCOMBE

Twenty-five lectures on Monday evenings at 7:00 in Room 107, Galbraith Building, beginning September 26. *Fee: \$60.00*

Those entering this course will be assumed to have had an introductory course in physics at the first year university level.

Selected topics to be discussed will include crystal structure and analysis, band theory, electrical and thermal conduction and thermoelectricity in

metals, principles of semi-conductor devices, magnetic properties of materials, superconductivity, etc. The necessary concepts in quantum theory and statistical mechanics will be developed as they are required.

Introduction to Stochastic Processes and their Applications in Business and Engineering

J. G. C. TEMPLETON

Twenty-five lectures on Tuesday evenings at 7:30 in Room 319, Galbraith Building, beginning September 27. *Fee: \$60.00*

Prerequisites: The course on Probability Theory and Mathematical Statistics listed in this brochure, or an equivalent course. Mathematical maturity, at the level expected of an engineering graduate. Some acquaintance with operations research procedures would be desirable.

This course is designed for engineers, operational researchers and management scientists who wish to acquire a working knowledge of the types of probabilistic models which are currently being applied to problems of business and engineering.

The course will contain a brief review of probability theory, classification of probabilistic models, and a discussion of Markov Processes in discrete and continuous time and space. An introduction to non-Markov processes will be given. Some consideration will be given to statistical inference and computer simulation in stochastic models. Random walk and queueing models will be discussed.

Applications include problems of machine replacement, reliability, inventory management, storage and maintenance.

The course will be limited to 35 students.

TEXT: Emanuel Parzen—*Stochastic Processes*, Holden-Day, Inc., San Francisco, 1962.

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

Linear Algebra and Matrices

R. W. P. ANDERSON

Twenty-five lectures on Tuesday evenings at 7:30 in Room 305, Galbraith Building, beginning September 27. *Fee: \$60.00*

Those entering this course will be assumed to have undergraduate engineering mathematics or its equivalent. It is not intended that the classic calculus or differential equations will be covered. The course consists of: elementary linear algebra including systems of linear equations, matrix, notations, and operations, inversion, vectors and transformations, leading into application in linear programming and eigen value problems.

The class will be limited to 50 students.

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

Linear Programming and its Extensions

J. W. ABRAMS

Twenty-five lectures on Thursday evenings at 7:30 in Room 319, Galbraith Building, beginning September 29. *Fee: \$60.00*

This course is designed for engineers, operational researchers, and management scientists who wish to be able to apply professionally linear programming and related techniques. Although no previous experience with mathematical programming is required, it will be helpful, as will be a familiarity with matrices and linear algebra.

The course will start from fundamentals and develop and consider such topics as the simplex method, the revised-simplex, the dual-simplex, activity analysis, price relationships, simple and generalized transportation problems, allocation problems, capacitated transportation problems, and flows through networks.

Parametric programming problems and elementary cases of stochastic and integer programming will be treated. An introduction to non-linear and dynamic programming will be included.

Although emphasis will be placed upon methods of setting up and solving problems, these problems will be related to specific applications and case studies in the literature.

The course will be limited to 35 students.

TEXT: G. B. Dantzig—*Linear Programming and Its Extensions*, Princeton University Press, 1965 (2nd Printing).

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

Metallurgy and Materials Science

J. R. CARRUTHERS

B. RAMASWAMI

Ten lectures on Wednesday evenings at 7:30 in Room 404, Mechanical Building, beginning October 12. *Fee:* \$25.00

This is an experimental course designed to introduce high school science teachers to the relationships between the structure and properties of materials. The course content will include: atomic bonding and crystal structure of metals, semi-conductors, and non-metals; allotropic transformations and defect structures in crystals; the effect and influence of recovery, recrystallization, and grain growth on physical and mechanical properties.

There will be adequate time for discussion of teaching methods and experiments suitable for classroom demonstrations in physics and chemistry. (Offered in co-operation with the American Society for Metals.)

Organic Chemistry

STEWART MCLEAN

Ten lectures on Wednesday evenings at 7:30 in Room 161, Lash Miller Building, beginning October 12. *Fee:* \$25.00

This course is designed to survey recent developments in the concepts and practice of organic chemistry for those who have had an earlier course of instruction in the field. Particular attention will be paid to modern ideas concerning molecular structure and reactivity.

Subjects to be discussed include:

A brief account of studies of the physical properties of organic compounds, with particular emphasis on spectroscopy (i.r., u.v., n.m.r., o.r.d., etc.);

A survey of the field of organic chemistry using types of reactions as a basis of classification;

An account of modern concepts of stereochemistry and their relationships to molecular reactivity;

Selected recent examples of the application of topics discussed to problems of structure, synthesis, etc.

(Offered in co-operation with the Chemical Institute of Canada.)

Probability Theory and Mathematical Statistics

S. KOTZ

Twenty-five lectures on Thursday evenings at 7:30 in Room 347, Galbraith Building, beginning September 29. *Fee:* \$60.00

This course offers a systematic introduction to modern probability theory and mathematical statistics, and is intended for engineers and practitioners in operations research. It is designed to form a rigorous background for those who desire to employ probability and statistics as a working tool and who may desire a thorough course as a preliminary to undertaking advanced work in industrial engineering, operations research, or management science. Subjects to be covered include sample spaces, random variables, probability distributions, characteristic functions, sampling, and theory of estimation. Familiarity with algebra and the calculus is required.

TEXT: John Freund—*Mathematical Statistics*, Prentice-Hall, Inc.

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

Simulation and Management Engineering Modeling

R. W. P. ANDERSON

Twenty lectures on Monday evenings at 7:30 in Room 216, Galbraith Building, beginning October 17. *Fee:* \$50.00

The course presented is a basic, introductory treatment of simulation for the non-expert in either simulation or electronic computer usage. Students are expected to have a working knowledge of algebra. A knowledge of calculus and elementary probability is desirable.

Simulation of system behaviour generally requires many calculations, and it is often considered that only electronic computers can carry out this process efficiently. Therefore some time must be spent on basic ideas which arise in computer programming. The language dealt with most fully is GPSS, but features of some others will be discussed.

Treatment of the course material is directed more to discussion than to lectures. The building blocks of simulation studies which are developed include problem definition, data collection, choice of model, model construction, probabilistic variables, random number generation, choice of output, model verification, and experimentation.

TEXT: McMillan & Gonzales—*Systems Analysis*, Irwin.

Statistical Decision Theory and Linear Programming

S. KOTZ

Twenty lectures on Tuesday evenings at 7:30 in Room 252, Mechanical Building, beginning October 11. *Fee:* \$50.00

This course is designed for engineers, operational researchers, management scientists and those who wish to apply mathematical techniques to decision

making. Familiarity with the methods of probability and statistics, such as is acquired through an introductory course, is an essential pre-requisite as is calculus. Familiarity with linear algebra and linear programming will be helpful.

After a review of the elements of probability and statistics—(events conditional probabilities, characteristics of random variables, important distributions, and sufficient statistics)—the course will treat of a number of statistical decision problems. In particular, principles used in decision making, states of nature, various decision rules and their comparison, Bayesian Decision rules and their computation, and geometrical interpretations will be covered.

Minimax Decision rules will be related to linear programming which will be applied in their computation. Approximate minimax decision rules will be treated. Sequential sampling problems will be discussed along with the minimax Wald decision rule and approximations. Methods of handling regular decisions over time will be covered. Decision theory models will be applied to estimation and the testing of hypotheses.

No TEXT.

Recommended references:

1. L. Weiss—*Statistical Decision Theory*, McGraw Hill, 1961.
2. S. Gass—*Linear Programming*, McGraw Hill, 1964 (Second Edition).
3. W. Karush—*Lectures on Decision Theory*, Systems Development Corporation, N Sp—1221 Santa Monica, California, 1963.

Statistical Methods

MRS. V. SAWYER

Twenty lectures on Thursday evenings at 7:30 in Room B, Law Building, beginning October 13. Fee: \$40.00

This is an introductory course in Statistical Methods and their application to the collection and analysis of data. While the underlying theoretical concepts will be discussed, mathematical derivations will be omitted.

Topics which will be covered are:

- Frequency distributions
- Averages and measures of variability
- Tests of significance
- Confidence intervals
- Analysis of variance
- Regression and correlation
- Frequency data and contingency tables
- Elementary methods for analyzing time series.

No mathematics beyond high school algebra is required. The class will be limited to 50 students.

Systems Engineering

F. P. J. RIMROTT

Twenty-five lectures on Wednesday evenings at 7:30 in Room 254, Mechanical Building, beginning September 28. Fee: \$60.00

The course is designed to provide engineers with a basic knowledge of the behaviour of mechanical, fluid, thermodynamic, and electrical elements and with the mathematics for analyzing systems made up of these elements.

The course will begin with a brief discussion of systems engineering and differential equations. A thorough discussion of the Laplace transform, including transform theorems, Heaviside expansion, pole-zero location and frequency response, and their application to engineering problems will follow. Dynamic analogies, laws of physical behaviour, units and symbols, elements of electrical systems, of mechanical rectilinear and rotational systems, of hydraulic systems, of pneumatic systems, and of thermodynamic systems will be discussed and rules governing the summation of parameters will be treated. Non-dimensional equations will be formed and analogs determined. Scale models of systems, the impedance concept, equivalent circuits and circuit analysis by impedance methods, circuit theorems such as the superposition theorem and Thevenin's theorem, as well as electrical, mechanical and fluid transformers will be studied. An introduction into block diagram analysis will also be given.

Applicants should have an engineering degree or equivalent experience.

TEXT: J. E. Alexander and J. M. Bailey—*Systems Engineering Mathematics*, Prentice-Hall Ltd.

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

Techniques of Operations Research

Course Director: H. V. FULLERTON

Lecturers: MRS. J. B. MEDCOF

H. A. J. ALLEN

J. CRAN

D. HILSON

Twenty lectures on Thursday evenings at 7:30 in Room 204, Galbraith Building, beginning October 13. *Fee:* \$50.00

This is an elementary course for those who wish to learn about operations research by working with some of its techniques. The techniques include those most frequently applied to problems in business and industry. They will be presented by specialists who have practical experience in their use.

The first section of the course will begin by considering the nature of operations research and of mathematical models. As matrices provide a simple way of representing and manipulating many models, some elementary material on matrix methods will be given. Multiple regression techniques will be introduced as one example of how relationships in a model may be derived.

The next section of the course will describe the most widely used deterministic technique—linear programming—and its application to industrial problems of allocating scarce resources.

The final section will deal with various probabilistic techniques and their application to waiting line and inventory problems.

The emphasis throughout will be on concepts, methods and applications and not on rigorous mathematical derivations of the theory. The course is thus not designed to provide a firm theoretical basis for future O.R. practitioners. A background of first-year university mathematics will be desirable though not essential.

Theory of Vibrations

B. TABARROK

Twenty-five lectures on Thursday evenings at 7:30 in Room 254, Mechanical Building, beginning September 29. *Fee:* \$60.00

The course is intended for practicing engineers and covers the fundamentals of vibration theory based on dynamical principles, with applications to practical problems.

After discussing the theory of single degree of freedom and two degrees of freedom systems, different methods of analysis for multimass systems are described. Emphasis is laid on writing the equations of motion in matrix notation for efficient machine computation. Energy theorems including Lagrange's equation and Rayleigh's principle are described and illustrated. Various numerical methods such as those by Dunkerley, Myklestad, Holzer and the use of transfer matrices and the process of matrix iteration are described. Frequency response determination by means of receptance and impedance methods is also discussed. Fourier and Laplace transforms are used in response analysis of linear systems to nonharmonic forces and finally an introduction to response of linear systems to random excitation is given.

Applicants should have an engineering degree or equivalent experience.

TEXT: W. T. Thomson—*Vibration Theory and Applications*, Prentice-Hall Ltd.

(Offered in co-operation with the Association of Professional Engineers of Ontario.)

CO-ORDINATED PROGRAMS

In a number of areas courses have been co-ordinated so that a person may take a series of subjects over a few years. These give a far greater understanding of an area than is possible with a single course. The purpose of these co-ordinated programs is to provide continuing education on a step-by-step basis in many fields. While any person with sufficient background on a subject may take any individual course, those who are interested in a co-ordinated set should follow the order of sequence when one is suggested.

Personnel-Industrial Relations

(Certificate to be awarded after completion of six full courses by the Personnel Association of Toronto or the Public Personnel Association.)

Subjects being offered 1966/67:

Economics—An Introduction

The Personnel Function

Psychology in Industry

Labour Relations

For details of each subject refer
to the table of contents.

Subjects to be available at a later date:

Management Principles and Organizational Behaviour (to be taken in
final year)

Labour Economics.

Manpower Development

(Certificate to be awarded after completion of six full courses by the Ontario Association of Training and Development.)

Subjects being offered 1966/67:

Psychology in Industry
Adult Learning and Teaching
Industrial Management
An Overview of Personnel Administration
Budgetary Controls (half course)

For details of each subject, refer to table of contents.

Subjects to be available at a later date:

Interviewing and Counselling
Communications in Business
Statistical Methods (half course)

Persons interested in this certificate course should phone 928-2400 or 928-2401 for more information and a special brochure.

Operations Research

The following courses will provide a good understanding of Operations Research. For those with insufficient background introductory courses are available. These are Techniques of Operations Research and High Speed Data Processing.

Subjects are:

Linear Algebra and Matrices
Linear Programming and its Extensions
Probability Theory and Mathematical Statistics
Introduction to Stochastic Processes
Decision Theory and Linear Programming
Simulation and Management Engineering Modeling

(For details of subjects, refer to table of contents.)

Marketing

Subjects offered are:

Marketing Management
Marketing Research
Sales Management
Industrial Marketing
Advertising & Promotion

(For details of subjects, refer to table of contents.)

**SPECIAL LECTURE PROGRAMS
CONDUCTED BY
THE DIVISION OF UNIVERSITY EXTENSION FOR THE
ADMINISTRATIVE MANAGEMENT SOCIETY**

A four-year program of study leading to the designation C.O.A. (Certified Office Administrator). The student must first complete the three-year Certificate Course in Business offered by the Division of Extension. Graduates of this course or holders of a B.Com. degree may then register for the final year and, upon successful competition, receive the AMS certificate.

Subjects covered include: Accounting, Economics, Human Factors of Administration, Business Organization, Business Finance, Production, Statistics, Marketing, and Office Management.

For more information phone 928-2393 and request an AMS calendar.

CANADIAN INDUSTRIAL MANAGEMENT ASSOCIATION

A four-year program of study leading to the designation C.I.M. (Certified Industrial Manager).

1st year—Business Organization and Accounting

2nd year—Engineering Economics and Industrial Engineering

3rd year—Manufacturing Controls and Marketing

4th year—Industrial Relations, and Cases and Problems in Administration.

Information pertaining to education requirements, fees, and registration can be obtained by contacting Canadian Industrial Management Association, 51 Eglinton Ave. East, Room 304, Toronto 12. Phone 485-5747.

SOCIETY OF INDUSTRIAL AND COST ACCOUNTANTS

A five-year program of study leading to the designation R.I.A. (Registered Industrial Accountant).

1st year—Accounting Fundamentals and Industrial Legislation

2nd year—Accounting II, Managerial Statistics, and Report Writing

3rd year—Advanced Accounting, and Industrial Organization and Management

4th year—Fundamentals of Cost Accounting

5th year—Advanced Cost Accounting.

Information pertaining to education requirements, fees, and registration can be obtained by contacting S.I.C.A. of Ontario, Room 1020, 25 Adelaide St. E., Toronto. Phone EM 6-6761.

CANADIAN BANKERS' ASSOCIATION

The Fellows' Course in Banking is designed specifically for staff members of Canadian chartered banks. Its purpose is to provide formal education for men and women who wish to prepare themselves for responsible positions in banking. Subjects covered include: Fundamentals of Accounting, Commercial Law, Canadian Banking, Business Finance, Financial Statement Analysis, Elementary Economics, and Money and Banking.

For more information, contact the staff or personnel department of your bank.

DIVISION OF EXTENSION PROGRAMS

The Division of University Extension offers many other courses and services. Readers of this calendar are invited to ask about:

GENERAL COURSE (Extension) leading to the Bachelor of Arts degree.
GENERAL COURSE IN SCIENCE (Extension) leading to the Bachelor of Science degree (first year only).

BACHELOR OF SCIENCE IN NURSING (Extension) (first year only).

EVENING AND AFTERNOON COURSES IN THE LIBERAL ARTS provide a wide range of cultural and non-technical courses for those who are not seeking credit. Courses offered are: Anthropology, Art Appreciation, Art of Speech, Astronomy, Automation, Ballet and Opera, Communication and Diction, Oral Communication, English Composition, English Literature, Mastering Good English, Exercises for Health, French, French for Businessmen, German, Interior Design, International Affairs, Islam as a Living Culture, Italian, Journalism, Law and the Layman, The Law of Censorship, Law and the Woman, Introduction to Logic, Magazine Article, Introduction to Medical Microbiology, Metropolis and Region, Music, Philosophy, Photography, Piano, Political Science, Psychology, Religion, Natural Science, The Scientific Point of View, Spanish, Introduction to Viruses and Virus Diseases, Contemporary Moral Experience, Existentialism and Royal Ontario Museum Courses: The Arts of Communication, Digging into the Past, Geology in the Museum and In Search of the Maritimes.

FRENCH SUMMER SCHOOL—SAINT PIERRE ET MIQUELON offers non-credit oral courses in elementary and advanced French. For the student who cannot go to France this summer, St. Pierre et Miquelon offers, at a fraction of the cost, the next best opportunity to experience a memorable and profitable holiday on French soil.

CERTIFICATE COURSE IN PUBLIC ADMINISTRATION is intended primarily for those with considerable experience in the public service who wish to acquire a broader background in the political and social sciences essential to an understanding of the executive branch of government and its functions. It is not intended as preparation for those planning to enter public service. Emphasis is on Canadian governments at all levels (federal, provincial and municipal), and their major problem areas.

The program consists of six subjects, four of which, Political Science, Economics, Public Administration, and Social Factors of Administration, are compulsory. Two optional subjects are selected from the following group: Economic Development of Canada, Urban Geography, Intergovernmental Relations and Local Government, and Modern Social and Political Ideas. Students may enrol in not more than two subjects each year. Thus, the program can be completed in a minimum of three years.

CERTIFICATE COURSE IN CRIMINOLOGY. This course is intended for those with considerable experience in the fields of law enforcement, criminology, adjudication, and the correctional services, who wish to deepen their knowledge and understanding of criminology in its various aspects. It examines some of the basic problems of crime, the administration of criminal justice, and the treatment of offenders. One or two subjects may be undertaken each year with six subjects required for graduation.

CERTIFICATE COURSE IN BUSINESS. Providing instruction in the basic principles of modern business, this course is designed for mature men and women in business, industry and the Civil Service who are in or working toward, positions of responsibility.

The course consists of six subjects, four obligatory and two options. The obligatory subjects are Accounting, Economics, Human Factors of Administration, and Business Organization. The two optional subjects are chosen from Business Finance, Production, Elementary Statistics, and Marketing. The time limit for successful completion of the course is four years.

CORRESPONDENCE COURSES are conducted by the Extension Division for the organizations listed below. A variety of subjects is available; each organization enrolls students in a course consisting of the subjects appropriate to its requirements and grants recognition for successful completion.

The Association of Administrative Assistants, the Association of Personnel in Employment Security, the Association of Professional Engineers, the Canadian Credit Institute, the Canadian Institute of Realtors, the Canadian Institute of Traffic and Transportation, the Chartered Institute of Secretaries, the Chemical Institute of Canada, the Ontario Association of School Business Officials.

Further information may be obtained by telephoning 928-2393.

DIVISION OF EXTENSION PROGRAMS IN CO-OPERATION WITH THE SCHOOL OF BUSINESS

Developing the Management Development Program

A two-day seminar to discuss the growing role of management development programs in business and other organizations. The changes will be discussed along with examples of developing programs in a number of Canadian firms. Scheduled for January 26-27, 1967.

Corporate Policy Planning

A two-day seminar dealing with the planning of corporate policies and strategies in key areas. Featured speaker will be Professor Igor Ansoff of the Carnegie Institute of Technology and author of "Corporate Strategy." Professor Ansoff is an experienced businessman as well as an educator. Scheduled for February 24-25, 1967.

Others

Several other two-day meetings are planned. These include:

Marketing and the Computer

Trade with Red China

Idea Flow—University To/From Business

Firm dates will be announced later in the year.

SCHOOL OF BUSINESS PROGRAMS

The School of Business sponsors a number of part-time special programs. Through these programs, practising business people can be made aware of research programs being carried out and can evaluate and suggest direction

for such activity. Similarly, faculty members can test the practicability and application of new concepts being developed in the academic business institutions which can be of great value in the normal conduct of graduate education in business.

Special programs include short seminars, one-day conferences, a summer residential program for executives, and a winter evening series of meetings: the Management of the Enterprise Seminar. These are outlined in more detail below.

Management of the Enterprise

This series of dinner meetings is designed for executives who hold positions of responsibility and who have had considerable experience in some phase of management. At each meeting the group hears a concise and provocative presentation of a topic of interest to the general manager. This is followed by question and discussion.

The objective of Management of the Enterprise is to examine and assess current developments in administration and business. Seminars are held once a week from October until March.

Business Outlook Seminar

This annual one-day conference to be held November 30, 1966, brings business executives together to examine the prospective business climate for the coming year. Business leaders and staff members of the School present their views on the outlook in general, and in various industries, for discussion.

Distinguished Lecture Series

Each year a leading exponent of some aspect of business is invited to present a few lectures at the University. The 1966 lecturer will be Dr. Herbert H. Simon of Carnegie Institute of Technology whose topic will be the impact of new decision-making technology and the computer on management and society. Dates are October 26 and 27 at Convocation Hall.

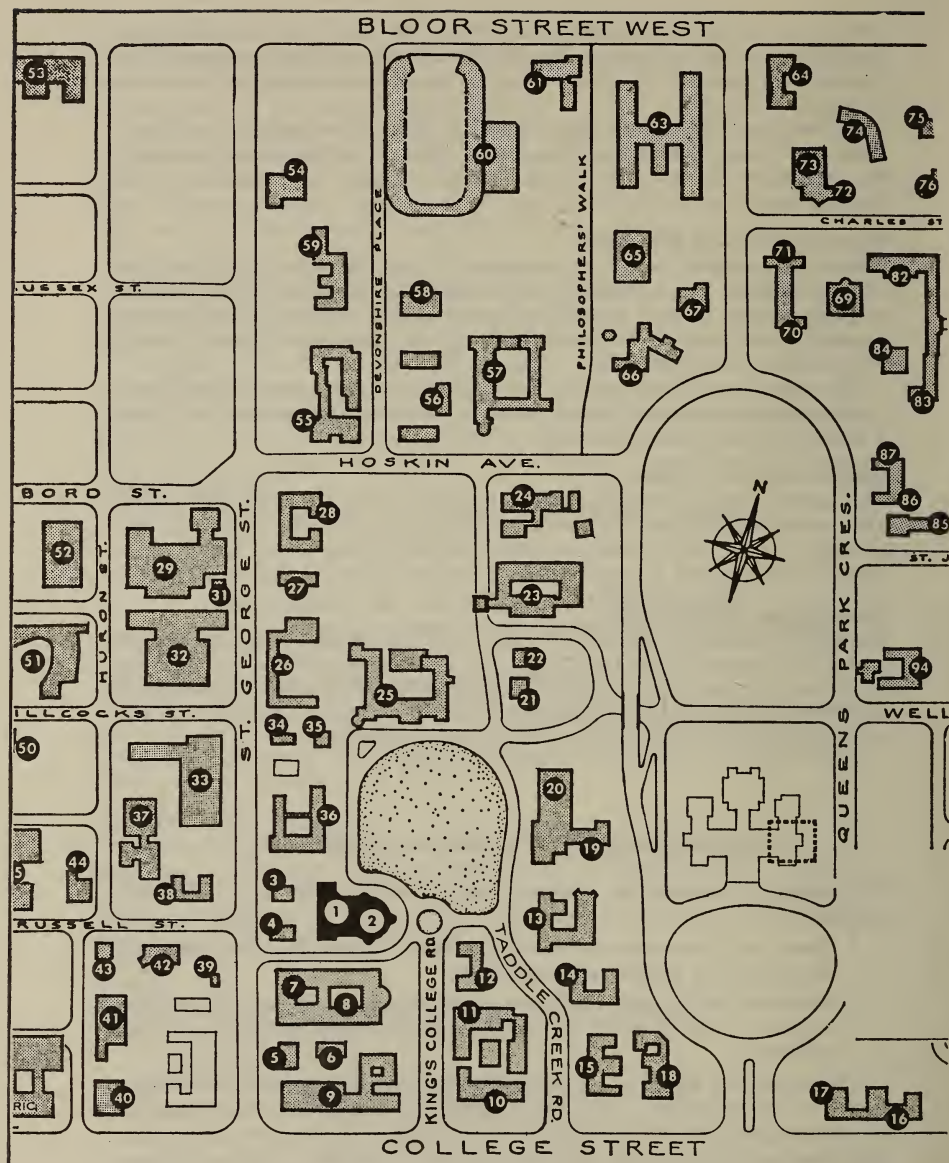
MANAGING BY SYSTEM SEMINAR

This seminar is a compact daytime course for executives. It is designed specially for:

- those who have specialized most of their careers and are preparing themselves for greater responsibilities;
- those who are in general management positions at present but require a greater understanding of management in order to function more efficiently.

The underlying theme of the seminar is the systems approach to management and administration. The systems concept is designed to focus attention on the maximization of the efficiency of the whole organization rather than piece-meal efficiency of the various functions. It provides a more vital way of viewing organization structure and it places proper emphasis on the integrating forces in administration. The seminar provides a unique opportunity for executives to re-examine their managerial tasks in the light of this modern approach to administration. It is a two-week course and is held annually in May.

For information on any of the School of Business programs, phone 928-3426.



67 Division of Extension

1 Simcoe Hall

36 Book Store

7 Galbraith Building

11 Mechanical Building

17 Best Institute

32 Sidney Smith Hall

33 Lash Miller Building

66 Law Building

85 Carr Hall

UNIVERSITY OF TORONTO

DIVISION OF EXTENSION

84 QUEEN'S PARK

TORONTO 5

Application for Enrolment

Business and Professional Courses

A complete application is required for each course

OFFICE USE ONLY

Receipt No.

C.A.

Course

MR.

NAME MRS.

MISS

(please print and underline surname)

ADDRESS

NUMBER AND STREET

CITY

POSTAL ZONE

TELEPHONE: HOME

BUSINESS

COMPANY NAME

COMPANY ADDRESS

PRESENT POSITION

FEE \$ CASH ☐ PERSONAL CHEQUE ☐ COMPANY CHEQUE ☐

(Cheques should be made payable to UNIVERSITY OF TORONTO at par Toronto)

Refunds can only be made if requested prior to the second lecture.

DATE

SIGNATURE

Any Course may be cancelled if there is insufficient enrolment. Fee is refunded in case of cancellation of Course or applicant may apply fee to another Course if application is made for transfer. (Please see booklet for details.)

PLEASE PRINT

The University of Toronto issues the following calendars and other publications concerning courses of instruction given by the University, any one of which may be had on application to the Registrar of the University or to the Secretary of the Faculty, School or Institute about which information is sought.

CALENDARS AND OTHER PUBLICATIONS ISSUED BY THE UNIVERSITY OF TORONTO

ADMISSION INFORMATION—	Admission Awards Admission Circular
APPLIED SCIENCE AND ENGINEERING—	Faculty of Applied Science and Engineering Engineering at Toronto—descriptive brochure Diploma Course in Operations Research School of Architecture
ARCHITECTURE—	School of Architecture
ARTS AND SCIENCE—	Faculty of Arts and Science Courses and Subjects in Arts and Science Diploma Course in Computing and Data Processing
BUSINESS—	School of Business—Graduate Program in Business Administration
CHILD STUDY—	Institute of Child Study
DENTISTRY—	Faculty of Dentistry Courses for Graduates in Dentistry Dental Hygiene
EDUCATION—	Ontario College of Education Graduate Degrees in Education
EXTENSION—	General Course (Extension) General Course in Science (Extension) Bachelor of Science in Nursing (Extension) Certificate Course in Business Certificate Course in Public Administration Evening and Afternoon Courses in the Liberal Arts Business and Professional Courses Correspondence Courses
FOOD SCIENCES—	Faculty of Food Sciences
FORESTRY—	Faculty of Forestry
GRADUATE STUDIES—	School of Graduate Studies
HYGIENE—	School of Hygiene
LAW—	Faculty of Law
LIBRARY SCIENCE—	School of Library Science
MEDICINE—	Faculty of Medicine Division of Rehabilitation Medicine Division of Postgraduate Medical Education
MUSIC—	Faculty of Music The Royal Conservatory of Music School of Music Year Book General Syllabus Pianoforte and Theory Syllabus
NURSING—	School of Nursing
PHARMACY—	Faculty of Pharmacy
PHYSICAL AND HEALTH EDUCATION—	School of Physical and Health Education
SOCIAL WORK—	School of Social Work

